Ontario fish and wildlife Review

Vol. 14, No. 2, 1975

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VOL. 14, NO. 2 SUMMER, 1975

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Problems, problems . . . How do you raise wild geese in captivity? If you solve that one, how do you persuade your big, new flocks to leave home and go wild? Bruce Buckland boasts a little about his giant Canadas, Page 3.

Jack Lawrence is hard at work on Lake Simcoe because little is known about the ecology of lake whitefish in the first few months of life. Page 21.

If Nottawasaga Island becomes a bird sanctuary, much of the credit must go to Dave Ferguson for his study of the island's bird life in spite of some rude gulls. See Page 9.

Wye Marsh has many snapping turtles — but how many is many? Details, Page 17, and cover photos by Dave Hogg.

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The goal of the Ministry of Natural Resources is to provide opportunities for outdoor recreation and resource development for the continuous social and economic benefit of the people of Ontario, and to administer, protect and conserve public lands and waters.

Ontario
Ministry of
Natural
Resources

Hon. Leo Bernier
Minister

Dr. J. K. Reynolds
Deputy Minister

EDITORIAL

THE OUTDOORS G.P.

He is an outdoor specialist. His patient is Nature, and he is forever making house calls.

He has been traditionally a protector of fish and game, and he realizes that enforcement is a basic tool of good fish and wildlife management. He still devotes much of his time to enforcement duties, but he has taken on many extra responsibilities over the years. His is an occupation now saddled with a multitude of tasks. The complexity of his vocation would amaze his early predecessors.

His knowledge, it seems, has to encompass every living creature in Ontario from the tiny mite to the magnificent moose. His concern is not just for the rainbow trout, ruffed grouse and deer, but also for the goldfinch in the tall weed patch and the Johnny darter in the stream riffles.

From his own outdoor experience and from knowledge learned from others, he knows what habitats are necessary for healthy animal populations.

He plants wildlife shrubs, erects nest boxes for bluebirds, builds brush piles for small mammals, estimates wildlife populations, and carries out lake and stream surveys.

If a woodlot is mediocre for grouse, he can explain to the landowner what changes to make so that grouse will thrive. He can also tell him how to enhance a small marsh for ducks and geese.

He realizes that as he enhances the land for fish and wildlife, he is making it a better place for humans as well. And he understands the importance of striving for a diversity of flora and fauna.

The eroded bank, the polluted stream, the silted gravel beds, the overgrazed woodlot, the drained marsh, and the denuded hillside are symptoms of a degraded habitat. He can recommend the cures, but unless people listen, the small stream may become a drainage ditch and the marsh a subdivision.

As proved by his reports in this issue, and in many previous issues of the 'Review', his duties and his interests are varied. In this age of specialization, he is the general practitioner for the outdoors, employed by the Ministry of Natural Resources.

Who is he?

He is your Conservation Officer.

VOL. 14, NO. 2 ONTARIO FISH AND WILDLIFE REVIEW SUMMER, 1975

This issue features four reports given at a one-day management seminar held at Alliston on February 25, 1975, by the Central Region of the Ministry of Natural Resources. The seminar was the first of an annual series planned to acquaint Conservation Officers with the various field projects conducted throughout the Region. Two of the reports (Giant Canada Geese of Toronto Island, and A Housing Program for Ducks) have already appeared in 'Review'. The style of the reports, as presented at the seminar, has been retained as closely as possible. As the agenda (below) shows, eight of the ten reports were presented by Conservation Officers.

AGENDA

Central Region Fish and Wildlife Management Seminar
February 25, 1975
Chairman: A. Fletcher

9:00 Chairman's Remarks
A. Fletcher, Special Programs Officer

9:15 Preparation of a Wildlife Management Plan
R. J. Jean Marie, Fish and Wildlife Extension Technician

9:45 Mud Lake, A Proposed Wildlife Extension Area
J. Bennett, Conservation Officer

10:15 Discussion

10:45 Giant Canada Goose Project, Toronto Islands
K. Faulkner, Conservation Officer

11:15 Giant Canada Goose Management, Luther Marsh
B. Buckland, Fish and Wildlife Management Officer

11:45 Lunch, Discussion

1:00 Credit River Coho Project
A. Wainio, Biologist

1:30 Port Severn Spawning Beds
M. Townes, Conservation Officer

2:00 Larval Sampling, Lake Simcoe
J. Lawrence, Fisheries Management Officer

2:30 Discussion

3:00 Wye Marsh Turtle Trapping
D. Hogg, Biologist

3:30 Wood Duck Nest Box Study
G. Haarmeyer, Fish and Wildlife Management Officer

3:45 The Birds of Nottawasaga Island
D. Ferguson, Conservation Officer

4:15 Summation
D. Montgomery, Conservation Officer

4:30 Comment
J. B. Dawson, Regional Biologist

Success at Luther Marsh — a portion of the big new flock.

THE GIANT CANADAS OF LUTHER MARSH

Report and photos by B. M. L. Buckland
Fish and Wildlife Management Officer, Cambridge District

GENERATIONS ago, giant Canada geese nested in southwestern Ontario, the south of the prairie provinces, and the northern lake states. The majestic birds were last seen in Ontario around 1930. The rediscovery of a few of these birds by Dr. Harold Hanson in 1962 inspired game managers to propagate a viable population of the great birds in their former breeding range. In 1969, the former Department of Lands and Forests, in co-operation with the Ontario Waterfowl Research Foundation, made breeding pairs of geese available to interested landowners who had water areas suitable for nesting geese.

Some of the geese were released at Luther Marsh because it appeared to have a good potential as a breeding area for giant Canadas. Because of its proximity to Guelph and the Research Foundation, expertise was readily available to assess goose behaviour and make recommendations as to goose management.

But what type of management techniques were suitable for these geese? Would they nest in captivity using artificial structures? What kind of enclosure should be built to allow captive birds to act normally? This report will try to answer these questions as they pertain to Luther Marsh.

To rear and study these great birds, it seemed that only non-flying birds should be introduced. A fenced enclosure would have to be built, and water would have to be made available. A 12-acre field, just below Luther Dam, was selected. Small ponds up to three feet deep, with a few nesting islands, were constructed and filled with water siphoned from Black Creek which ran through the enclosure.

Why so large an area? The geese needed grazing area, water areas, and enough space to allow them to behave as normally as possible in captivity.

The construction of the perimeter fence was as important as the design of the ponds. Two main factors were considered: to prevent the wing-clipped birds from getting out, and to prevent predators from getting in. An eight-foot, page-wire fence was erected. To prevent skunks, foxes and dogs from burrowing under the fence, regular mink wire was buried one foot deep; it extended three feet above the ground and was wired to the fence.

The fence seemed to work well except for raccoons which climbed over the fence. To stop them, a single strand of No. 9 wire was strung around the fence on the outside, mounted on insulators, and hooked up to an electrical power source.

No further difficulty with predators was encountered until they made holes in the fence. This occurred most frequently during nesting. Mending the breaks became difficult, and it became easier to leave the openings and place either (live) box traps or conibear traps in them. Thus, individual predators could be easily removed.

FEEDING

The feeding of captive birds is critical, especially in February and March prior to the stressful period of nesting and incubation. Cob corn, although readily eaten during the fall and winter, did not provide adequate nutrition for the birds during incubation. The result was many abandoned nests, weak females, infertile eggs, and weak goslings.

Harry Lumsden, waterfowl research biologist with Fish and Wildlife Research Branch, recommended a diet that would improve the birds' condition. From late fall to the end of February, the geese were fed 90 per cent cob corn and 10 per cent waterfowl breeder pellets containing 18 per cent protein. From February to the end of May, the percentage of pellets was increased weekly until the mixture was reversed — 10 per cent cob corn and 90 per cent pellets. Once incubation was completed, the percentage of pellets was reduced to 40 per cent waterfowl starter and grower until the young birds began grazing.

How important is grazing in goose management? What types of grasses are preferred?

To answer these questions, a field adjacent to the enclosure was seeded down in strips of fall wheat, rye, timothy, trefoil, Kentucky blue grass, alfalfa, red clover, and alsike. Most grasses were eaten if kept succulent by frequent mowings, with Kentucky blue grass, climax timothy, and a ladino clover mixture being preferred. Freshly sprouted fall wheat was eaten in the fall and the following spring.

During the mild winter of 1973-4 when all geese were allowed to free-fly, they left the enclosure each day to feed from the surrounding countryside. They ate the food supplied in the enclosure only during stormy and extremely cold days — about every third or fourth day.

The geese came through the winter in excellent condition, and nesting success increased from 2.6 young per nest in 1973 to 4.4 in 1974. One can only guess that mild weather, improved feeding conditions, and the added year of maturity of the birds — or a combination of these three factors — were responsible for this startling increase in productivity.

NESTING AND REARING

When the giant Canada geese were first enclosed, it had not been decided what type of nesting structure should be supplied. Since goslings are imprinted to the nests where they are hatched, it was believed that the nesting structures should be the same as the ones used where the geese had been raised — Toronto Island and Holiday Beach.

Forty-five-gallon barrels were cut into three equal sections, and these sections, with a doorway cut away, were the first nesting structures provided for the geese. The middle section, having no bottom, was fitted with a screen to hold nesting material. To test a variety of locations, the nesting structures were set on the ground, placed on stumps, raised on legs, and floated on rafts. Square wooden boxes were also tried in the same locations.

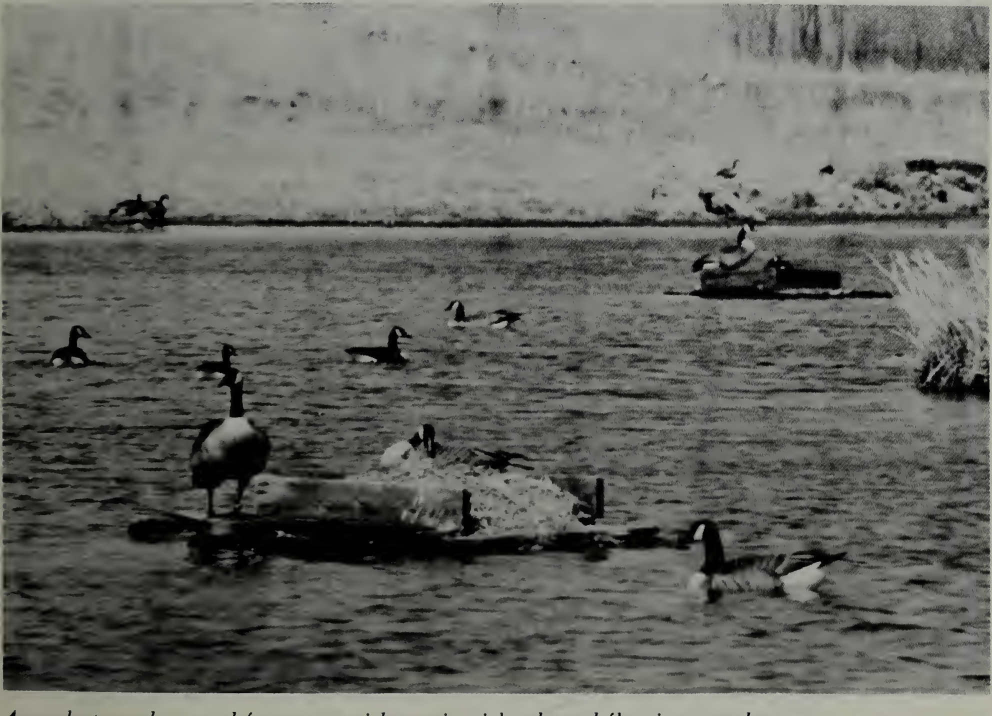
The first attempts proved that geese will nest in such structures and that they prefer the barrel type. From careful observation of goose behaviour, it was noted that they prefer a nest site that is somewhat elevated — not necessarily raised off the ground, but slightly above the ground level so that they can have an unobstructed view of their surroundings.

The nest structures placed on stumps and raised on legs were used more by the geese, but they had a poorer success rate than nests on the ground. Therefore, all boxes and barrel sections were removed from elevations and placed on the ground. It was noted that nesting sites were usually selected by mating pairs prior to spring break-up, and so it was neccessary to have nest structures filled with hay or straw before this time.

As a side benefit, the inclement weather in early spring completely saturated the nesting material, making a moist nest which kept the eggs from drying out and the shells from becoming too hard for the young goslings to crack.

A new nest structure having all the good points (a slight elevation and moist material)

A goose remains on the nest while her mate warns the intruding photographer.



A made-to-order pond for geese with nesting islands and floating nest boxes.

can be constructed easily by laying three bales of hay flat on the ground and placing a part of a bale on the top for nesting material. When left out for a year, this mound blends into the landscape and becomes more desirable.

In 1972, to prevent predation, day-old goslings were taken from the nests and placed in a brooder. The transfer proved disastrous as it was difficult to control the temperature of the brooder. The crowding of goslings became serious, and many were smothered. It had been hoped that the adults would renest, after losing their goslings, but none did because they had hatched a complete clutch.

In recent years, the adult birds have raised their own young, and few goslings have been lost. The adults are quite capable of warding off winged predators. The success rates of nesting and incubation have steadily increased as follows:

1971 — 23 nests .... 1.8 goslings per nest
1972 — 36 nests .... 2.5 goslings per nest
1973 — 35 nests .... 2.6 goslings per nest
1974 — 31 nests .... 4.4 goslings per nest

These nests were all located within the enclosure where predator controls were in force. Nesting on the lake outside the enclosure, which began in earnest in 1974, was somewhat less successful with only 2.9 goslings hatched per nest.

RELEASE TO THE WILD

For the first three years of the Luther Marsh goose program, wing clipping was carried out to keep the flock inside the enclosure. But, with the increase from two successful hatching years and other introductions, the number of geese in the enclosure make clipping impractical. (A release of goslings on the lake in 1972 proved unsuccessful because most of them returned to the enclosure within a day or two, and the remainder were never seen again.)

As an alternative, in March, 1973, 116 one-, and two-year-old birds, which had been clipped in the fall of 1972, were released on the ice of Luther Lake, leaving the free-flying dominant birds in the enclosure. The released birds were mostly mated pairs which had already begun to select nest sites in the enclosure. The results of this release seemed satisfactory because some two-year-old birds nested in barrel nests along the shoreline and raised young. No further clipping was attempted in hopes that the young would migrate.

In 1973, an attempt was made to force the geese to migrate. No food was supplied inside the enclosure until January 4, 1974, when the lake had been frozen over for a full two weeks. This venture was successful as the flock had shrunk from 700 to 110 birds.

The remaining birds were the originals introduced in 1970, and it is doubted that these birds will ever migrate. However, the younger birds have established the fact of migration, and prospects seem good that a second migration will occur in 1975.

RECOMMENDATIONS

As a basic guide to goose management, the following list of do's and don'ts may prove helpful to anyone who is starting a new flock.

Things Not to Do . . .

- Do not use screen bottoms in nesting barrels unless the barrels are set on mineral soil.
- Do not use raised nesting structures unless the nesting material can be kept damp as wind tends to dry the nesting material.
- Do not use artificial nesting structures on rafts unless the nest is raised two or three inches above the raft. Wave action may put water into the nest and make it soggy.
- Do not release goslings without adequate protection. Use the same type of material for the roof as for the sides of a gosling enclosure.

Things to Do . . .

- Do start with wing-clipped birds (first and second years only).
- Do ensure that the enclosure is large enough to provide plenty of grazing; has ponds or water area with nesting islands; and has adequate predator-proof fence.
- Do provide nutritious food to ensure nesting success.
- Do provide good grazing range in summer.
- Do allow adult birds to raise their young.
- Do convert to a free-flying flock as soon as possible after a successful incubation year.
- Do allow birds to migrate — and assist them if they refuse.

In Conclusion . . . These large birds are inspiring to see, and much can be learned from their behaviour in all seasons of the year. If their behaviour is not monitored, success may turn to disaster, and the entire flock may be lost. Therefore, it is the manager's responsibility to observe these great birds constantly so that problems can be solved before they become a critical factor in the over-all management of the largest goose in the world, the giant Canada goose, *Branta canadensis maxima.*

A nesting box. The hay must be kept moist.

MUD LAKE — BULLHEAD CAPITAL

Mud Lake in Pembroke District could very well be termed the bullhead capital of the Ottawa Valley. Like many lakes, it possesses marshy, warm, shallow areas that may be prohibitive to any other species of fish. Over a good part of the country, when a red blooded local youngster sets out to fish, his first fish may well be the repulsive bullhead — little horned pout, mud pout, catfish or mountain trout, as our locals call them. It's just unfortunate to have been built in such an ugly looking way with those coarse, gruesome whiskers sticking out in front. The brown bullhead is a highly functional fish. It can thrive under adverse conditions that high-powered game fish can't tolerate, and that, of course, is the main reason why so many children get acquainted with it. Its flesh, which is pinkish, is usually firm and so good (especially in cooler waters in spring) that the small fisherman feels real pride in his achievement at supper that night. Mud Lake can produce a catch of up to 200 of these tasty morsels in a spring evening for the experienced or inexperienced fisherman. Anglers arrive with every conceivable kind of tackle known (and some not known) to entice the bullhead. One warning — watch out for the spines. They can puncture the skin easily and cause a painful injury.

— *Roger Levoy, Pembroke District*

INTROSPECT

A personal opinion
not necessarily endorsed by
the Ministry of Natural Resources

THE WAITING GAME

by A. J. Stewart
Fish & Wildlife Supervisor
Huronia District

The moon has gone behind some clouds and now only the headlights of the car can be seen moving slowly along the back road. Suddenly, a third beam of light reaches out from the car and begins a slow sweep of an adjacent apple orchard.

In the darkness of a nearby clump of bushes, a lone figure speaks into a portable radio. In response, a green cruiser, secluded in some trees a mile away, starts up.

The suspect vehicle continues along the road, the spotlight searching the fields and trees. Behind it, the green cruiser has moved closer. Beyond it, a second cruiser pulls out of a farm lane and blocks the road. The officer in this cruiser nervously clutches his radio mike and watches the approaching lights. In the orchard, the officer on foot walks parallel to the suspect car, threading his way among the trees.

It's an old game but a serious one — one that is played every fall across Ontario's deer range. Poachers, shiners, night hunters, deer jackers, or jacklighters — call them what you will — seek the white-tailed deer while ethical sportsmen sleep.

A deer's eyes shine green in the rays of a spotlight, making an easy target for a poacher's rifle. A shot echoing through the night goes unheeded by a sleeping public. Conservation Officers are few, and there's money to be made selling venison. It's a good gamble.

The Ministry of Natural Resources views these illegal activities as a threat to a valuable resource and it's part of the conservation officer's job to minimize this threat.

It's frustrating, thankless, lonely work. Each officer has hundreds of square miles to patrol, and the odds are slim that poachers will decide to work an orchard, field or road at the same time that the officer is watching.

Armed with a rifle, a spotlight and the cover of night, the experienced poacher has a large array of tricks to protect him on his night forays — citizen-band radios to monitor Ministry radios; decoy cars to trick officers into revealing their presence; cars in front of and behind the jacklighting car to block the conservation officer's vehicle while the evidence is discarded; phoning the officer's home late at night to see if he's in — the list is endless.

On the other hand, the Ministry is modernizing its effort. Radio systems are efficient; red dome lights and fender stop lights are standard on cruisers; the Ministry of Justice's forensic laboratory in Toronto is receiving Ministry business; and aircraft are being used successfully for night patrols.

But it still depends on the individual officer waiting in the night, trying to stay awake, and waiting and waiting and hoping he picked the right time and place, hoping when they come that he doesn't make his move too soon or too late, hoping there are not too many of them to handle and that they aren't drunk, and that he can get the rifle before it's thrown away or before somebody gets shot (especially himself), and wishing he had more help.

The jacklighters' headlights have almost reached the parked cruiser, and the officer speaks a command into the mike, turning on the cruiser's red dome light at the same time. The following cruiser closes to cut off the escape. In the orchard, the officer runs towards the poachers' car.

In the suspect car there is panic. The startled driver tries to throw his spotlight out the window, but a Conservation Officer appears at his door. His passenger jumps out of the car, rifle in hand, and runs for the orchard, only to be apprehended by the officer on foot.

The rifle and lights are seized as evidence of night hunting, pertinent information is taken down, and charges are laid. The hours of waiting have paid off—a successful night.

There are 1,001 stories in the naked woods, and this has been one of them.

Under some conditions, fire can move faster in the forest than a man can run. Flammable gases are given off, and flaming brands can be thrown a mile ahead of the fire.
— M. W. Macquarrie, Timmins District

Lake Erie produces over 70 per cent of all the freshwater fish caught commercially in Ontario.

Herring gulls still wheel about the 117-year-old lighthouse.

THE BIRDS OF NOTTAWASAGA ISLAND

Report and photos by D. L. Ferguson
Conservation Officer, Huronia District

NOTTAWASAGA Island lies three miles north of Collingwood in Georgian Bay. It is rectangular in shape and covers about five acres. An historical aspect of the federally owned island is the stone lighthouse which was built in 1858. It was manned from its first year to 1891 by Captain George Collins (Jack MacMurchy, Collingwood, 1970). The lighthouse is still in service, powered by batteries.

Local citizens in the area approached the Ministry of Natural Resources to ask if the island could become a bird sanctuary. This paper documents the plants, mammals and birds that were found to be common on the island.

HERRING GULL

The most common nesting bird on Nottawasaga Island is the herring gull, *Larus argentatus,* with a population estimated to include more than 1,000 adult birds. A sample plot was searched, and all gull nests were counted. The density of nests was calculated, and this was in turn extrapolated to include the entire island. See Table I.

As the nests were counted, the number of eggs was recorded, giving an average of 2.4 eggs per nest and a total of 1,562 gull eggs on the island in 1972.

Some interesting points were noted. Two nests contained rocks which the gulls appeared to be trying to hatch. One gull nest contained two mallard eggs which later hatched. Several nests had eggs outside the nest or partially buried in the nesting material. Twenty adult gulls were found dead of unknown causes.

A survey of 205 nests found 39 dead, young gulls of which seven had been completely eaten by a predator, with indications that the predator was an owl or a hawk. The estimated mortality would be 124, and this would give a surviving population of 1,438 gulls on the island in 1973.

Gull nests were found throughout the island. The heaviest density was on the shore which consisted mainly of small stones. Two open fields had the next heaviest population, and other nests were scattered at the bases of trees. Only two gull nests were not on the ground. One was on the top of a little shack near the lighthouse, and one was on a large rock, out in the water.

Gull nests were mostly made of dead grass, but green grass was seen in the nests as the season progressed. Some nests were flat, and others were high mounds. Unexpectedly, two mallard nests were found within three feet of a gull's nest.

Most gull nests contained three eggs. Some had fewer eggs, but only one nest was found with four eggs. If the nests are robbed, the gulls keep laying all summer, but only one brood is raised. Two gull eggs were found much smaller than the average size, about the size of robin eggs, but they never hatched.

The period of incubation is 24 to 28 days (Bulletin 113, USNM). When the young hatch, they are downy and light gray with dark spots. Within a couple of hours, they have the instinct to hide, even if it is just putting their heads under grass or a log. Young gulls can swim within hours after hatching, and they usually take to the wing within five weeks.

Adult gulls are very aggressive after the young are hatched. They swoop at intruders with a screech and sometimes even come close enough to hit a person — as was experienced by the author during the study.

BLACK-CROWNED NIGHT HERON

The second most common bird on Nottawasaga Island is the black-crowned night heron, *Nycticorax nycticorax,* also known as the night heron. This beautiful bird is roughly 26 inches in length.

The number of night heron nests counted in 1973 was 84 (compared with 56 in 1972) indicating an adult population of 168 birds. (See Table I.) The nests were found only in cedar trees on the island. They were made out of dead branches and twigs and each contained from three to six pale, sea-green eggs.

The young birds started hatching in late June and early July and could be seen sitting out on branches when they were old enough to walk. If they are frightened, they will take to the ground and run. If they are too young to walk or fly, they will make jabbing gestures at close intruders — as they did to the author when he climbed a tree and looked into a nest. Some of the young herons were flying by July 19.

To the best of the author's knowledge, Nottawasaga Island is the farthest north the black-crowned night heron nests in Ontario. It is the only known nesting area in Simcoe County.

The night heron is not strictly noctural. It

The herring gull is far from timid.

Great blue heron on nest.

feeds mostly in the evening or after dark. Unlike the great blue heron which takes a rigid stance while feeding, the night heron walks around briskly with its head held low, looking for prey. Its feeding area takes in small creeks and the shores of ponds and swamps (T. Gilbert Pearson, 1944).

The night heron is a gregarious bird and nests in large colonies. These heronries are usually found in an isolated patch of woods.

GREAT BLUE HERON

The great blue heron, *Ardea herodias*, is the third most common species on the island with a population estimated at 60 birds. Other names for this bird are red-shouldered heron, blue crane, crane, and common blue crane. It measures from 42 to 50 inches in length.

Thirty great blue heron nests were counted on the island in 1973 as compared with 40 in the preceding year (Table I). The nests were made of twigs. They were in a variety of trees, including cedar, ash, basswood, and dead deciduous trees, all concentrated on one part of the island.

It was noted that the nests contained from three to six blue or greenish eggs as stated in Birds of America (George Gladden, 1944).

When the young hatch, they are gray, awkward balls of fluff. Their parents regurgitate their food to them. They stay close to the nest until they can fly, but when they are old enough to walk they can be seen sitting on branches outside their nests. Two dead, young heron were found hanging in trees, but there was no evidence of what caused their death. The young were still flightless on July 19.

The great blue heron feeds on fish, spawn, frogs, crawfish, small snakes, salamanders and various water creatures along with grasshoppers and meadow mice (George Gladden, 1944).

MALLARD DUCKS

The last prominent bird on the island is the mallard duck, *Anas platyrhynchos*. A total of 12 mallard nests were observed with an average of eight to ten eggs of a pale olive or buffy green colour.

The mallard nests were made out of grass and leaves, lined with down, and usually well secluded under trees, logs or long grass. All nests had a successful hatch.

Other species of ducks were seen near the island, but no nests were found.

OTHER SPECIES

The following birds were seen or heard on Nottawasaga Island:

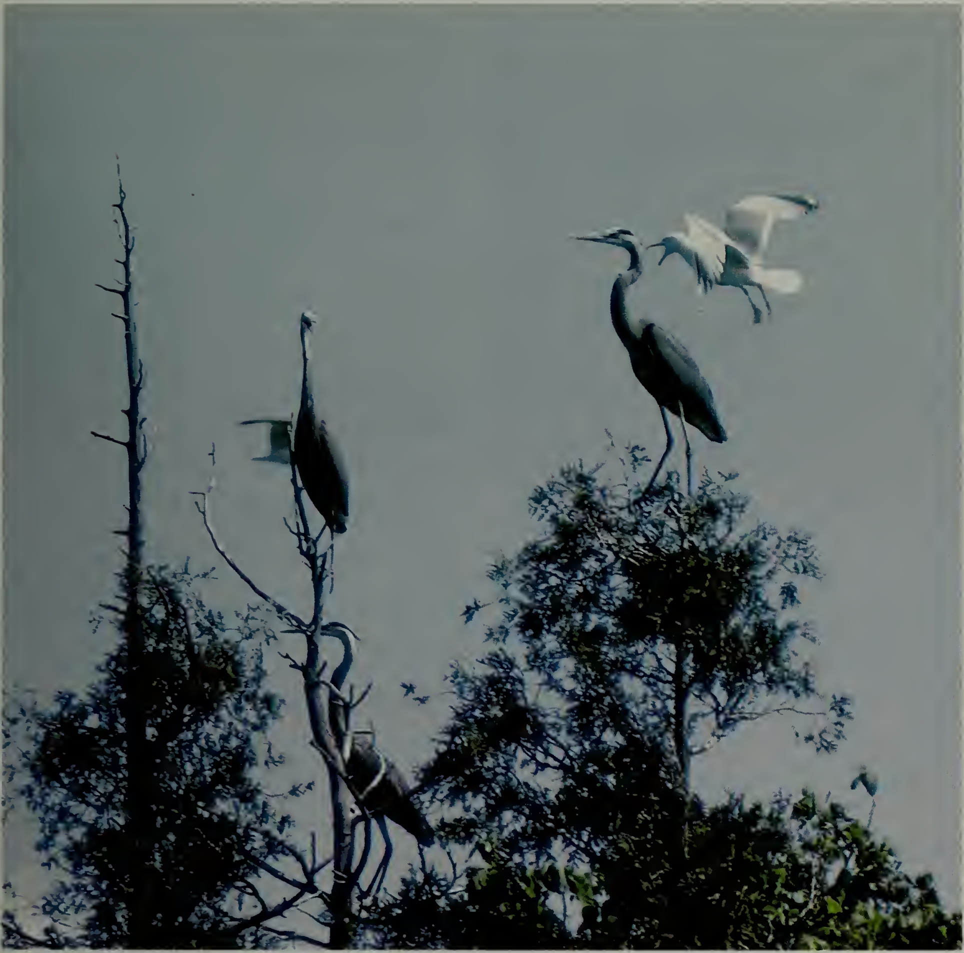
Double-crested cormorant, *Phalacrocorax auritus*
Green heron, *Butorides virescens*
Gadwall, *Anas strepera*
Pintail, *Anas acuta*
Common merganser, *Lophodytes cucullatus*
Common tern, *Sterna hirundo*
Tree swallow, *Iridoprocne bicolor*

SCENES FROM NOTTAWASAGA ISLAND

— *Photos by D. L. Ferguson*

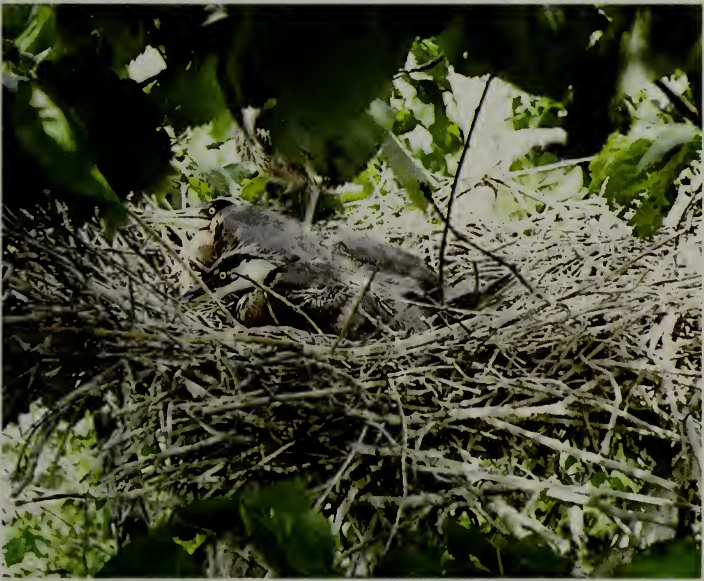
Top: Gullscape. Above: Herring gull nest.

A young bl



Great Blue Heron (three, quiet) and Herring Gull (one, noisy).

ned night heron.



Three young in nest of great blue heron.

Black-crowned night heron.

Barn swallow, *Hirundo rustica*
Blue jay, *Cyanocitta cristata*
Catbird, *Dumetella carolinensis*
Starling, *Sturnus vulgaris*
Nashville warbler, *Vermivora ruficapilla*
Yellowthroat, *Geothlypis trichas*
American redstart, *Setophaga ruticilla*
Red-winged blackbird, *Agelaius phoeniceus*
Baltimore oriole, *Icterus galbula*
Brown-headed cowbird, *Molothrus ater*
Songsparrow, *Melospiza melodia.*

The only mammal life observed on the island was one live and two dead rabbits, *Sylvilagus floridanus*. Droppings were discovered that contained bones and hair which could have come from a fox, *Vulpes vulpes*.

The island's plant life is listed in Table II.

CONCLUSION

Nottawasaga Island is a valuable breeding ground for the species mentioned in this report, and it should be protected from any development.

Until this date, the island has been left alone, and no damage has been done to its wildlife populations. In the past year, the bird populations have risen except for the great blue heron. If the birds were disturbed too much, the gulls would begin building nests in trees and on other high structures.

If the island becomes a sanctuary, it should be protected from the beginning of April to the end of August. This would keep people off the island during the nesting period and allow duck hunting in the fall.

Nottawasaga Island provides many interesting sights in the spring and early summer. If it becomes a sanctuary, a boardwalk could be built to the centre of the island where a small bird-watching tower could be erected. This would protect the nests and permit the public to observe the birds.

TABLE I. BIRD NESTS

Number of Nests on Nottawasaga Island

Species	1972	1973
Herring Gull	525	651
Black Crowned Night Heron	56	84
Great Blue Heron	40	30

TABLE II. VEGETATION

Species of plants on Nottawasaga Island from sight lists taken by R. S. W. Bobbette on July 5, 1972, and June 1, 1973.

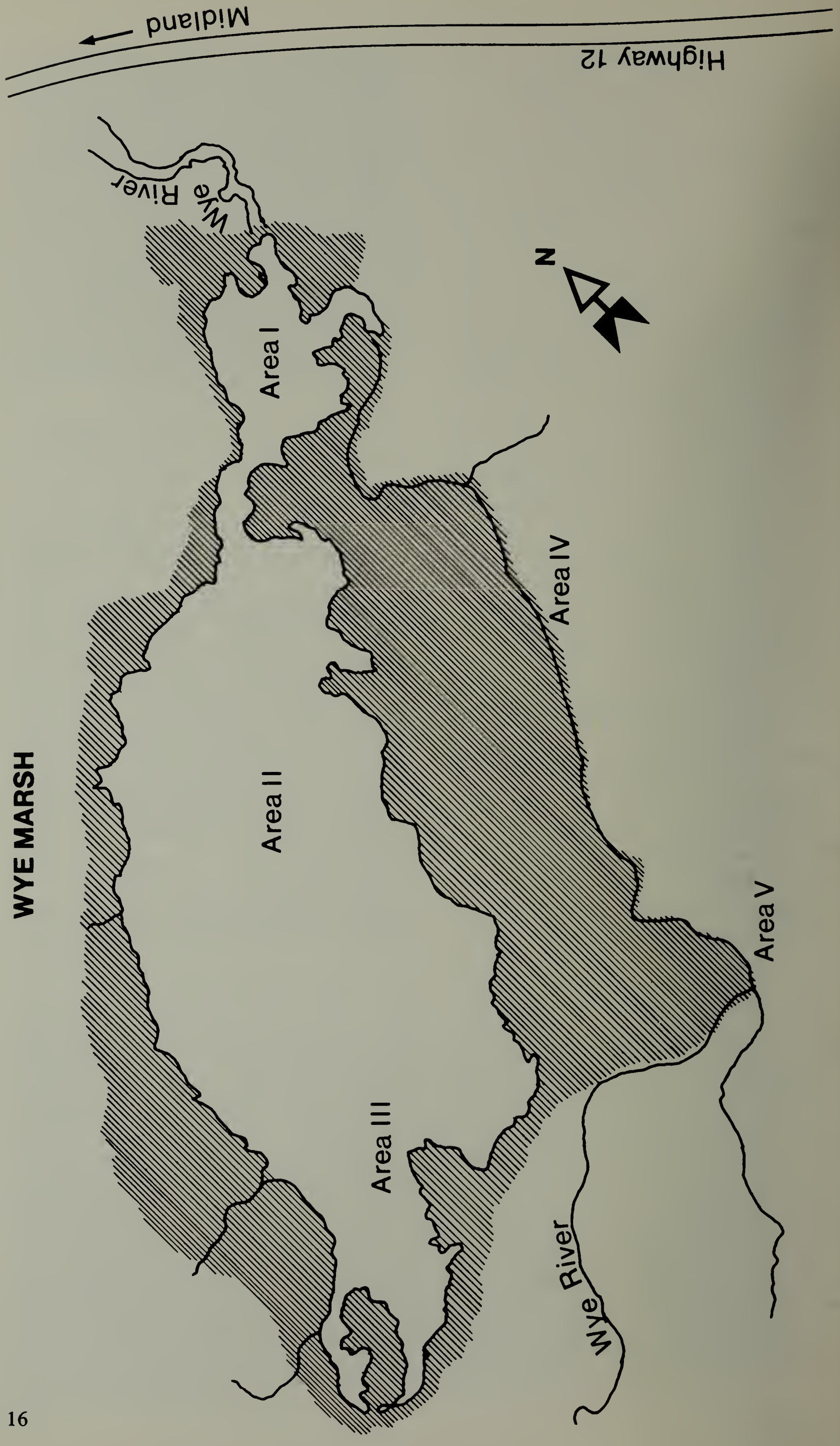
Picea mariana — Black spruce
Agropyron repens — Quack grass
Sagittaria latifolia — Arrowhead
Poa pratensis — Kentucky bluegrass
Phleum pratense — Timothy
Carex vulpinoidea — Sedge
Scirpus sp. — Bulrush
Hemerocallus fulva — Day lily
Smilacina stellata — Starry false solomons-seal
Populus balsamifera — Balsam poplar
Betula papyrifera — Paper birch
Alnus rugosa — Speckled alder
Ulmus americana — American elm
Urtica procera — Stinging nettle
Rumex crispus — Yellow dock
Polygonum convolvulus — Black bindweed
Chenopodium album — Lamb's quarters
Arenaria serpyllifolia — Thyme-leaved sandwort
Berberis vulgaris — Common barberry
Vitis riparia — Wild grape
Tilia american — Basswood
Hypericum punctatum — St. John's wort
Hypericum perforatum — Common St. John's wort
Daucus carota — Queen Anne's lace
Cornus stolonifera — Red osier dogwood
Syringa vulgaris — Lilac
Echium vulgare — Vipers bluegloss
Nepeta cataris — Catnip
Leonurus cardiaca — Motherwort
Solanum dulcamara — Nightshade
Linaria vulgaris — Butter and eggs
Galium aparine — Goosegrass
Galium asprellum — Rough bedstraw
Dipsacus sylvestris — Teasel
Lepidium campestre — Cow-cress
Capsella bursa-pastoris — Shepherds-purse
Barbarea vulgaris — Yellow rocket

Sedum acre — Mossy stonecrop
Physocarpus opulifolius — Ninebark
Fragaria vesca — Wild strawberry
Rubus strigosus — Red raspberry
Thuja occidentalis — Eastern white cedar
Agrostis gigantea — Redtop
Poa compressa — Canada bluegrass
Phalaris arundinacea — Reed canary grass
Dactylis glomerate — Orchard grass
Carex hysterician — Sedge
Juncus balticus — Baltic rush
Asparagus officinalis — Asparagus
Epipactus helleborine — Helleborine orchid
Populus tremuloides — Trembling aspen
Salix fragilis — Crack willow
Salix alba — White willow
Salix lucida — Shining willow
Salix amygdaloides — Peach-leaved willow
Salixbebbiana — Long-beaked willow
Salix interior — Sand-bar willow
Salix discolor — Large pussy-willow
Salix gracilis — Slender willow
Actaea rubra — Red baneberry
Aquilegia canadensis — Columbine
Imatiens capensis — Touch-me-not (jewelweed)
Parthenocissus vitacea or Quinquefolia — Virginia creeper
Shepherdia canadensis — Buffalo-berry
Oenothera biennis or parviflora — Evening primrose
Heracleum lanatum — Cow parsnip
Fraxinus pensylvanica — Red ash
Asclepia syriaca — Common milkweed
Cynoglossum officinale — Common hound's tongue
Monarda fistulosa — Wild bergamot
Verbascum thapsus — Mullein
Veronica americana — American brooklime
Sambucus pubens — Red-berried alder
Lonicera tatrica — Tartarian honeysuckle
Brassica kaber — Charlock
Thlaspi srvense — Penny-cress
Arabis divaricarpas — Rock cress
Sisymbrium altissimum — Tumble-mustard
Ribes cynosbati — Prickly gooseberry
Spirea latifolia — Wild spirea
Rosa acicularis — Spiny wild rose
Pyrus malus — Apple
Potentilla norvegica — Cinquefoil
Potentilla anserina — Silverweed
Potentilla fruticosa — Shrubby cinquefoil
Geranium robertianum — Herb-robert
Celastrus scandens — Bittersweet
Acer saccharum — Sugar maple
Acer negundo — Manitoba maple
Chrysanthemum leucanthemum — Ox-eye Daisy
Erigeron philadephicus — Fleabane
Hieracium pratense — King devil
Tragopogon dubius — Goat's-beard
Prunus virginiana — Chokecherry
Prunus pumila — Sand-cherry
Amelanchier sanguinea — June-berry
Rhus radicans — Poison ivy
Rhus typhina — Stag-horn sumac
Echinocystic lobata — Burr cucumber
Achillea millefolium — Milfoil
Senecio pauperculus — Groundsel
Solidago canadensis — Goldenrod
Arctium minus — Burdock
Tarazacum officinale — Dandelion

THE MOOSE IN UNIT 28

During January and February of 1975, the Fish and Wildlife staff of Kirkland Lake District conducted an intensive aerial moose survey of Management Unit 28. Unit 28 encompasses an area bounded by Abitibi Lake and the Abitibi, Blade and Watabeag Rivers in the north and west; the Englehart River and Highway 66 to Matachewan in the west; the Montreal River and Lake Temiskaming in the south; and the Quebec border in the east. Thus, it takes in Matheson, Kirkland Lake, Englehart and the Tri-Town area. Contrary to the beliefs of most hunters, cows outnumber bulls in the herd after the hunting season by almost two to one. Twenty-one per cent of the herd consisted of calf moose born in the spring of 1974, and only 38 per cent of the cows seen were accompanied by calves. The "twin calf" percentage of all calves observed was only 8.5 per cent. In general, the survey indicated an unstable and declining moose herd in Unit 28. As most hunters are aware, the moose season in this area has been reduced to two weeks (October 18 to 31) in 1975. It is hoped that this will result in a drastic reduction in kill and form the first step in the rehabilitation of the moose herd in Management Unit 28.

— *J. F. Gardner, Fish & Wildlife Supervisor, Kirkland Lake District*



WYE MARSH

Midland
Highway 12
Wye River
N
Area I
Area IV
Area II
Area V
Area III
Wye River

The sampled snapper, unhappy out of his element, was soon returned to the water.

THE SNAPPING TURTLES OF WYE MARSH

Report and photos by D. M. Hogg
District Biologist, Huronia District

WYE Marsh Wildlife Management Area on the outskirts of Midland is a fascinating marsh providing ideal habitat for many marsh creatures. Along with carp, sunfish and pike, the waters of the marsh abound with snapping turtles, *Chelydra serpentina.*

In 1973, a commercial operation resulted in 6,390 pounds of snapping turtles being removed during a five-week period and shipped live to markets in the United States. This represented a value of about $2,200 to the private trapper using the marsh.

A harvest of this size caused some concern, and it was decided that the status of the turtle should be determined before further trapping was allowed.

In the spring of 1974, the Ministry of Natural Resources and the Canadian Wildlife Service undertook to gather information on the snapping turtles of Wye Marsh.

The 2,000-acre management area includes 1,355 acres of upland meadows, hardwood forest, and cedar swamp. The 645-acre marsh is fringed by emergent vegetation consisting primarily of cattails, sedges and grasses, while the central part of the marsh (about 300 acres) is dominated by water milfoil, pond weeds, waterlily, waterweed and tapegrass. The water sources of the marsh include the Wye River and several spring-fed streams.

For the purpose of the study, the open-water portion of the marsh was divided into three areas (Figure I), and two trapping sites were selected along the river.

The trapper, who had taken turtles for commercial purposes the previous year, was employed by the Ministry during June and July to live-trap turtles, to tag them, to record their sex, length and weight, and return them to the marsh.

The turtles were captured in steel-framed, net-covered traps, baited with pieces of fresh carp. With one exception, they were released in the area in which they were trapped.

The trapping was concentrated at the edges of the open-water areas, and the adjacent marshy areas were not well sampled except for whatever emigration to open-water areas that may have been occurring.

The tagging was accomplished with serially numbered tags which were clamped to the

The trap was baited with pieces of fresh carp.

webbing between the toes of the rear foot. To check for tag loss, a hole was drilled at the rear of the shell of 143 of the 196 tagged turtles.

The carapace (shell) was measured at the midline, and each animal was weighed with a spring scale that had a capacity of 30 pounds. Unfortunately, the scale proved inadequate for some of the larger turtles.

The sex of the reptiles was determined by feeling for developed ovaries beneath the soft flesh at the edge of the plastron (undershell). This technique is, of course, only possible just before the females lay their eggs. By mid-July, at the very latest, it would not be effective.

SIZE

The combined, average length of carapace for males and females was 30.0 cm, and their combined, average weight was 5.9 kg (Table I). The females averaged 27.4 cm and 4.5 kg. This is comparable to the 26.3 cm and 4.4 kg reported for 255 female snapping turtles from Wisconsin and New York.

In a South Dakota population, the males averaged 33.5 cm in length while the females averaged 31.9 cm (compared to the 33.5 cm and 27.4 cm for male and female turtles in Wye Marsh).

The males from Wye Marsh averaged 3 kg heavier and 5.6 cm longer than the females. This agrees, in general, with other findings in the United States.

SEX RATIO

The sexing technique consisted primarily of palpation of the oviduct for eggs. This underestimated the number of females because some females had undoubtedly dropped their eggs before capture, and perhaps some had not yet reached maturity. All turtles captured in this study had a carapace length in excess of 20 cm which is considered by some authorities as the minimal length for maturity.

A sex ratio of 1:1 was expected, in keeping with the work of others, with some chance that males would outnumber females because of the sexing technique. However, our results revealed a ratio of five females to four males. The Wye Marsh study cannot be considered definitive as there may have been a bias not only in the sexing technique,

The snapper's small plastron fails to cover its soft flesh. Photo by J. C. Weir.

but also in the capture technique, and in the time of year at which the study took place. Future work should attempt to eliminate these biases.

MOVEMENT

Until the recapture phase of the program in 1975, little can be known about any large-scale movements of the snapping turtles in Wye Marsh. Movement was exhibited by some of the recaptures (Table II).

Some authorities have suggested that snapping turtles are territorial, but others have disputed this interpretation. Quite frequently during this study, two, and sometimes three, turtles were taken in one trap which seems to indicate that these turtles did not have well-defined territories.

Three turtles captured in Area III on June 19, and released at the dock in Area I, were recaptured in Area III on June 25. These animals moved about 1¼ miles in six days to return to their original capture area. Another turtle, captured and released in Area I, was recaptured in Area III three days later. Three other turtles exhibited movement from their original capture site.

However, 11 of the 18 recaptures were taken from the vicinity where they were released. The movement shown by some turtles may simply have been avoidance reaction to the site of their "manhandling" during the tagging process.

Some authorities believe that small snapping turtles live in tributary streams and do not enter marshes and lakes until they reach maturity. Trapping in Areas IV and V, along the river, did not support this view. However, trapping was limited at these sites, and it is possible that mature animals were more involved in reproductive activities at the time of the study, and thus may have frequented areas they normally would not.

POPULATION

One hundred and ninety-six snapping turtles were marked and released during 14 days in June and July, 1974 (Table III). During that period, 18 of these turtles were recaptured at various sites throughout the marsh (Table II).

Based on a sample of 18, the mathematically projected population of Wye Marsh is 1,139 turtles. This estimate is unreliable, however, because of the small sample size. As more turtles are tagged and recaptured in the future, population values will become more accurate.

The turtle trapper believes that the turtles he took in 1974 were larger than those captured in 1973. That there was some decrease in population is obvious from the fact that the trapper removed 6,390 pounds (2,901 kg)in 1973 and only 3,533.7 pounds (1,150.3 kg) in 1974 while expending the same effort. The increase in size over a one-year period could be attributed to a decrease in food competition. To substantiate this, much more data are required over a period of years.

This has been a preliminary report about a continuing study which in 1975 will involve nesting investigations, varying trapping techniques, extended summer trapping, the search for smaller, immature turtles, and further tagging.

There is still much to be learned about the turtles of Wye Marsh.

TABLE I. TURTLE DATA

Snapping Turtles in Wye Marsh, 1974

Characteristics	Males	Females	Combined
Number	88	108	196
Weight (kg)			
Total	666.7	483.6	1,150.3
Average	7.5	4.5	5.9
Largest	13.6+	10.7	....
Smallest	1.8	1.9	....
Length (cm)			
Average	33.5	27.4	30.0
Largest	40.6	36.8	....
Smallest	21.6	20.3	....

TABLE II. RECAPTURES

Snapping Turtles in Wye Marsh, 1974

Tag No.	Releases Area	Releases Date	Recaptures Area	Recaptures Date	Sex	Areas Moved
73411	1	June 19	3	June 22	M	2
73412	1	June 19	3	June 25	M	2
73413	1	June 19	3	June 25	M	2
73462	1	June 22	3	June 25	M	2
73447	3	June 21	3	June 26	M	0
73475	3	June 22	3	June 26	F	0
73471	3	June 22	3	June 26	M	0
73409	2	June 19	2	June 27	F	0
73469	3	June 22	3	June 27	F	0
73427	3	June 20	2	June 28	F	1
73472	3	June 22	2	June 28	F	1
73470	3	June 22	3	June 28	M	0
73451	3	June 21	3	June 28	F	0
73412	3	June 25	3	June 28	M	0
73506	2	June 27	2	July 3	F	0
73504	2	June 27	3	July 3	M	1
73482	2	June 25	2	July 4	F	0
73421	2	June 20	2	July 4	M	0

TABLE III. SUMMARY

Snapping Turtles in Wye Marsh, 1974

Area	Males	Females	Total	Trap Days	No. per Trap Day
I	14	16	30	54	0.56
II	32	40	72	146	0.49
III	34	39	73	138	0.53
IV	6	4	10	22	0.45
V	2	9	11	26	0.42
Summary	88	108	196	386	0.50

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Jack Lawrence and summer crew prepare to trawl. — *Photos by Ron Desjardines.*

LARVAL* TRAWLING IN LAKE SIMCOE

Report by J. N. Lawrence
Fisheries Management Officer, Lake Simcoe Unit, Maple District

ADULT lake whitefish, *Coregonus clupeaformis,* have been sampled on Lake Simcoe for a number of years. Whitefish samples are taken from the fall spawning run, and in the winter from angler catches and local markets.

A greater number of large whitefish are now evident in the fishery. This is attributed both to an increase in growth rate and to a predominance of older fish (eight, nine and ten years of age) in the adult population.

The exact reasons for the decline in whitefish numbers are not known. Predation, and competition for food, by yellow perch, *Perca flavescens,* and smelt, *Osmerus mordax,* and habitat deterioration are possible factors responsible for high whitefish mortalities in the early stages of their life history.

Since fewer young fish appear to be entering the population, there should be less competition for food. Older whitefish should find more food available and exhibit a marked increase in growth.

However, little is known about the ecology of the species in the first few months of life. To fill in some of the gaps, a larval sampling project has been designed to locate whitefish nursery grounds.

Whitefish eggs are released in the fall (late October and throughout November) on spawning shoals where they sink to the bottom and lie there until hatched. The incubation period is long, and hatches occur in the early spring (March and April), approximately when the ice is disappearing from the lake. It is thought that very high mortalities are experienced by whitefish during the egg and newly hatched larval stages, although the entire first year of life is probably crucial.

The project proposal was to sample a

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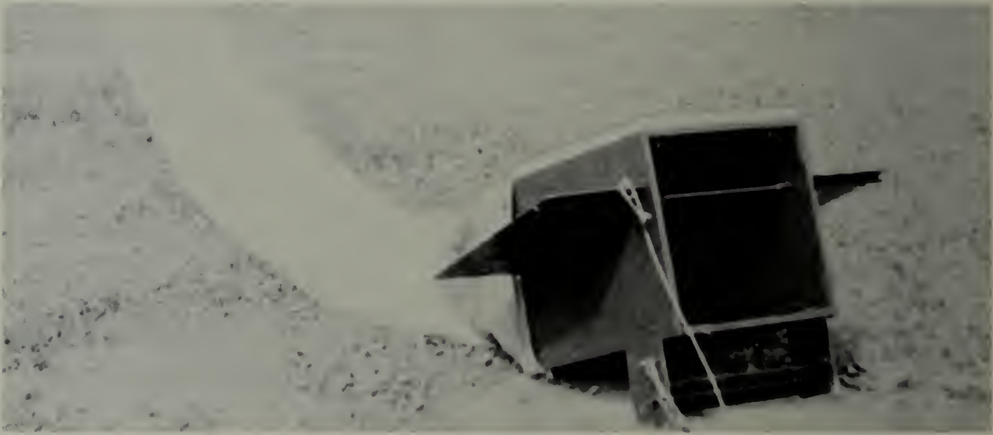
*ED. NOTE — The term 'larval fish', is commonly used in fisheries work, but the usage is perhaps improper since the term, 'larval', refers to the immature form of animals that undergo some metamorphis into adults. The correct terminology to use, in describing the immature forms of fishes, is presently the subject of discussion among biologists. In this report, the term, 'larval fish', refers to the fish from the time the egg is hatched until the fins have formed the number of fin rays they will have as adults.

The cod end is easily uncoupled.   The entire gear is three metres long.



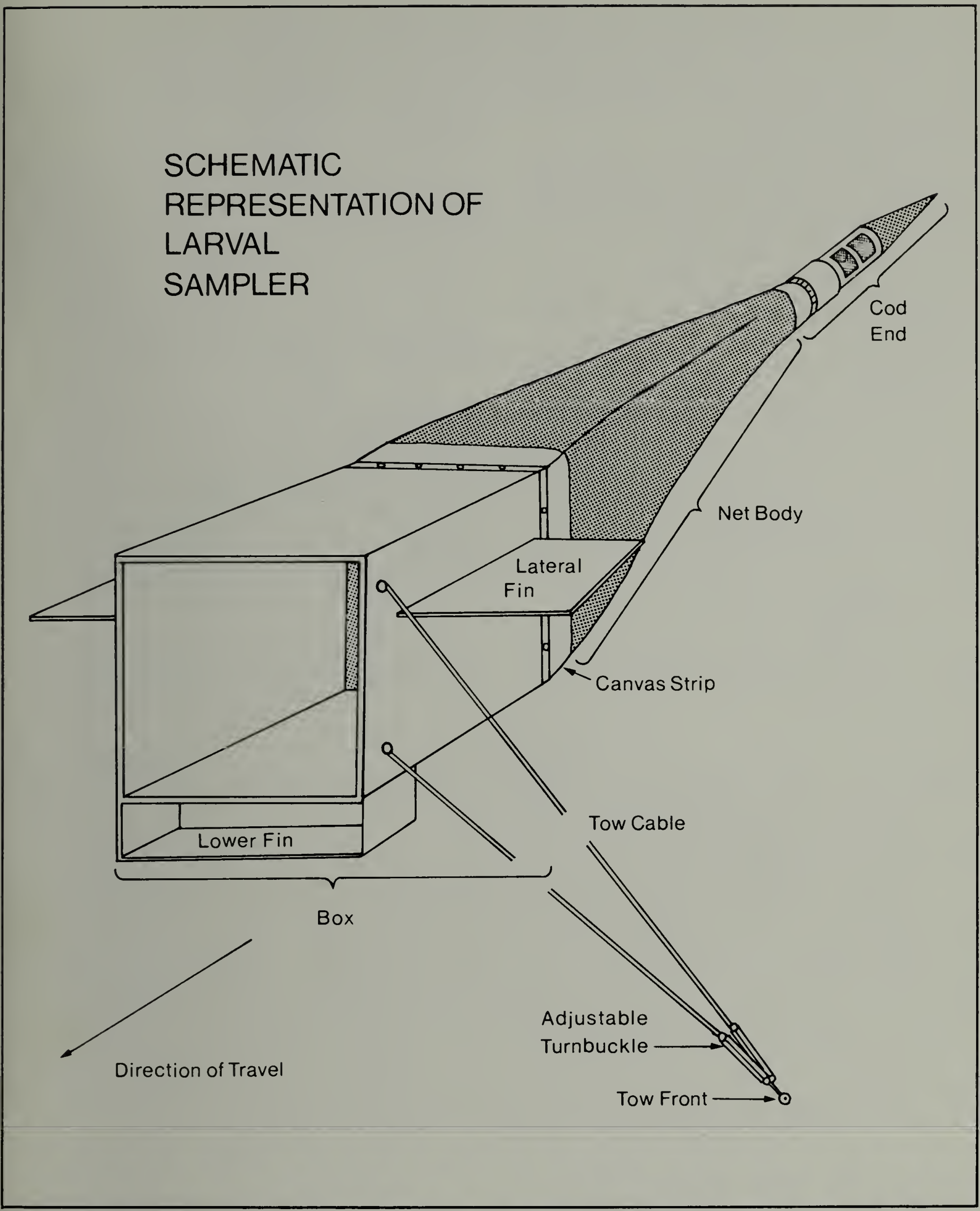
variety of habitats to locate the hatchery and nursery grounds of young whitefish and to identify the fry of other species.

The sampling gear is of simple design and relatively inexpensive to construct. It is easily handled by one man and is not disturbed by the wake of the towboat.

The front portion is a rectangular box of plywood, suitably reinforced and having an opening 38 cm by 38 cm. The nylon netting (nitex), forming the body of the gear, is two metres long; it is attached to the trailing edge of the box by a strip of canvas and a series of bolts. The cod end is constructed of plastic pipe; it is coupled to the posterior end of the net by a stainless steel clasp. The cod end can be easily uncoupled and its contents washed into a suitable container. The length of the entire gear is approximately three metres.

The gear is towed behind a 17-foot outboard motorboat at trawl speeds of from 6 to 8 km per hour. The tow cables are 7.5 m long, and turnbuckles are used for fine, length adjustments. Aluminum fins on the lateral and ventral surfaces of the box stabilize the gear and regulate its towing depth.

From May 21 to June 27, 1974, 32 tows were made during nine sampling days, and 1,327 larval fish were caught. Individual tows were timed at 20 minutes each with minor exceptions. The surface water tem-



SCHEMATIC REPRESENTATION OF LARVAL SAMPLER

perature readings ranged between 15°C and 20°C during the experimental period.

Tows were made in a wide variety of habitats. After a 20-minute tow, the contents of the cod end were placed immediately in plastic sample bottles and fixed in a ten per cent formaldehyde solution. In the laboratory, identification manuals and preserved samples of larval fish facilitated identification of species. Myomere* counts, arrangement, number and appearance of chromatophores**, and body proportions were considered in identification.

Fifty-seven per cent of the tows caught larval fish, and most tows included larval yellow perch. Forty-one per cent of the larval catch were positively identified as yellow perch. The only other species identified was common white sucker which made up three per cent of the larval catch. The remaining

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*Myomeres — successive units of segmental trunk musculature.

**Chromatophores — special cells containing pigment granules.

56 per cent were caught on June 6 in Barnstable Bay. These were thought to be yellow perch, but their minute size (averaging less than 6 mm in total length) made absolute identification difficult.

Larval yellow perch dominated the collections because the tows were made shortly after the perch eggs had hatched. Hatching usually occurs in eight to ten days with the young about 5 mm in length.

Larval whitefish and yellow perch have similar feeding habits and occupy the same nursery areas. Although the catches were mainly yellow perch, the trawling results were relevant in general whitefish studies.

The identifying characteristics of a larval yellow perch are the very dark eye, approximately 18 myomeres before the vent and the same behind, well developed pectorals, uneven series of chromatophores on the ventral surface behind the vent, and discernible teeth. Dyeing the larval fish with gentian violet highlighted the myomeres.

Larval yellow perch were found in a variety of habitats: protected bays and relatively unprotected shorelines. Boulder, rubble, sandy, muddy and weedy areas were general bottom characteristics of the different areas sampled. This supports information that yellow perch spawn in a variety of habitats.

The trawling equipment was successful, and its use in capturing young whitefish is promising. It has already been recommended that a second sampler (identical to the one already in use) be constructed and the two samplers towed simultaneously. It would then be possible to obtain more information on the horizontal distribution of young whitefish.

Since the primary concern is the ecology of young whitefish, larval trawling in the future will be conducted from late March to mid-May, the period when the young of this species should be available to the gear. Once catches of young whitefish* are obtained, the nursery ground can then be documented and indices of abundance established.

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*Trawling studies carried out in the spring of 1975 were successful in catching numbers of larval whitefish and larval herring.

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STICKS IN THE MUD

A fish weir is not a new fishing system when you consider that Champlain noted one at the Atherley Narrows on August 17, 1615. Although a modern fish weir may appear sophisticated by comparison, the basic concept is still the same — a fence designed to imprison fish in narrow straights of water. Not long ago, Dr. Richard Johnston and Ken Cassavoy of Trent University's archaeological group made an intriguing discovery at Atherley Narrows where Lakes Simcoe and Couchiching are joined together. While diving in the area, Ken Cassavoy noticed stakes buried in the mud that clearly formed a fish weir pattern. Samples of the wood were brought back and identified as cedar, elm and white birch by Dr. J. E. Nighswander of Trent. The samples were then sent to the University of Saskatchewan for ageing by the radio-carbon dating method, and they were estimated to be 4,000 years old. It is mind boggling to think that Atherley Narrows was noted for its fishing so long ago. It is still a popular fishing area and accounts for 68 per cent of the yellow perch caught in the summer fishery in the Lake Simcoe area.

— *J. N. Lawrence*